IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of	: **Docket No. 0074-497815**
KEITH VIVIAN ALEXANDER	:
Application No. 10/756,808	:
Confirmation No. 1507	:
Filed: January 13, 2004	:
For: FRAME STRUCTURE FOR A TRAMPOLINE	:

Commissioner for Patents
Alexandria, Virginia 22313-1450

CLAIM FOR PRIORITY

In the Declaration being filed concurrently herewith, the Applicant in the above-identified application claims the benefit of priority under 35 U.S.C. §119 of New Zealand Application No. 523650, filed on January 15, 2003. Pursuant to §119(b) and 37 C.F.R. §1.55, we are submitting herewith a certified copy of the New Zealand Application.

Respectfully submitted,

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Attorneys for Applicant(s)

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Enclosure: Priority document.

Ministry of Economic Development
Manatū Ōhanga
Intellectual Property Office of New Zealand

CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 15 January 2003 with an application for Letters Patent number 523650 made by KEITH VIVIAN ALEXANDER.

I further certify that pursuant to a claim under Section 24(1) of the Patents Act 1953, a direction was given that the application proceeds in the name of BOARD & BATTEN INTERNATIONAL INC.

Dated 6 January 2004.

Neville Harris
Commissioner of Patents, Trade Marks and Designs

COMMISSIONER OF PATENTS, TRADEMARKS & DESIGNS
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NEW ZEALAND PATENTS ACT 1953

PROVISIONAL SPECIFICATION

TRAMPOLINE

I, KEITH VIVIAN ALEXANDER, a New Zealand citizen of 65 Middleton Road, Upper Riccarton, Christchurch, New Zealand, do hereby declare this invention to be described in the following statement:

FIELD OF INVENTION

This invention relates to an addition for the particular type of trampoline that uses flexible cantilevered rods for springs. An example of such a soft-edged trampoline is shown in **Figure 1**.

BACKGROUND:

The recently developed soft-edged trampoline (SET) is shown in **Figure 1**. It uses pultruded fibreglass rods as the spring elements and has the particular advantages that the frame is well clear and below the bouncing surface, while the design allows the mat edge some resilience so as to prevent injury. The unit is easily assembled and disassembled (assembly typically in 15 minutes), and is relatively small and light compared to conventional home recreational trampolines.

The bounce capability can be the same as conventional trampolines.

In early versions of this type of trampoline the disassembled frame was in 4 sectors and these were connected by metal tongues that fitted into the neighbouring sectors, as shown in **Figure 2**. Also the rod sockets were mounted outside the frame as shown in **Figure 2.**

Once assembled and in use these frame sectors are subject to a twisting moment caused by the mat tension some distance above the frame, as shown in **Figure 3**. The connections between the frame sectors must successfully carry this twisting moment, and keep the frame sectors in a flat circle. In the earlier version the long tongues and the U-shaped frame legs successfully carried this twisting moment.

During the process of readying this product for the market two changes were made, both of which have reduced the stability of the assembled frame. These changes were:

1. To improve appearance the rod sockets have been mounted within the tube as shown in **Figure 4,** rather than on the outside as shown in **Figure 2**. This has made it difficult to connect the frame sectors with the long metal tongues that were used before. Much shorter tongues, or unavoidably weaker, split tongues are now required, as shown in **Figure 5**.

2. It has become apparent that compact packaging of the unit will be crucial for ready distribution. In the early versions the 4 frame sectors measured over 2 m each. These are too large. Smaller, six-frame sectors were found to be a more practical size from the distribution point of view. Once reassembled however the new six-part frames were unstable as shown in **Figure 6**. The tongues and U-shaped legs were now not adequate. The twisting moment if **Figure 3** caused them to roll inwards distorting the circle.

The main object of the invention is to provide essential support to the frame when it has to be broken down into multiple small sections for easy distribution

DISCLOSURE OF INVENTION

The subject of this patent is the solution that has been developed to maintain the stability of these easily-distributed, multi-part frames.

The way this is achieved is by providing the leg with and additional central structure that gives support to the connection between the frame sectors, an example of which is shown in **Figure 7.**

In summary then this invention describes a leg structure that can effectively prevent the twisting of frame sections by providing a reacting couple, one part of which comprises a vertical upwards support at the joint between the sectors and the other part comprises an vertically downwards support at the leg connection to the frame; both parts of the reacting couple are within the trampoline leg structure. This couple is transferred to the

next frame section by the leg horizontal member being in tension and the frame joint being in compression.

In earlier versions without this support, the relative twisting of the frames was adequately prevented by the bending resistance of the leg and tongue. With the six-section frame and split tongues, this was no longer adequate.

With the additional central structure support of **Figure 7** the relative twisting of the frame sectors is prevented instead by an opposing moment comprising an upward reaction from the additional central structure, and a downward reaction resulting from the clamping bolt within the frame leg-socket. This is shown in **Figure 8**. By this means the moment is effectively converted to tension in the lower member of the leg and compression at the joint between the frame sectors. This couple is reacted by an equal and opposite couple from the next frame section (**Figure 9**).

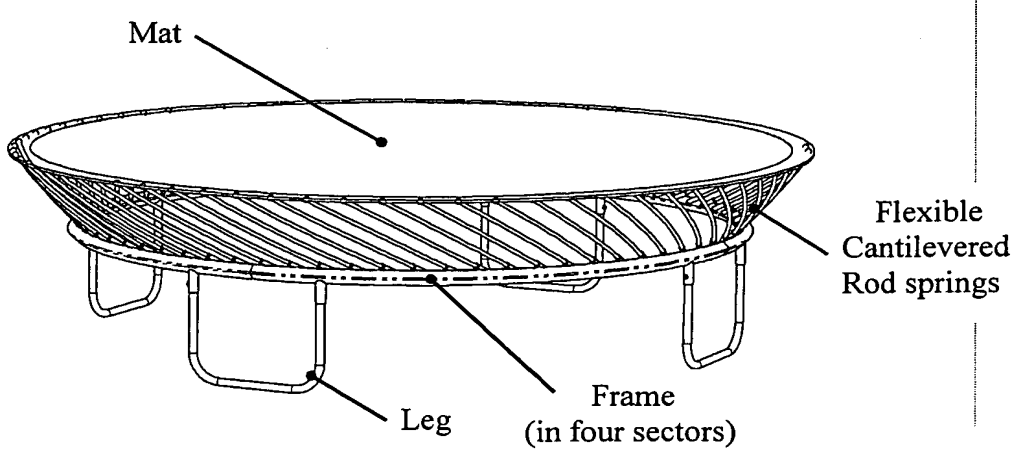

Figure 1: An early version of a soft-edged trampoline, with flexible cantilever rods for springs

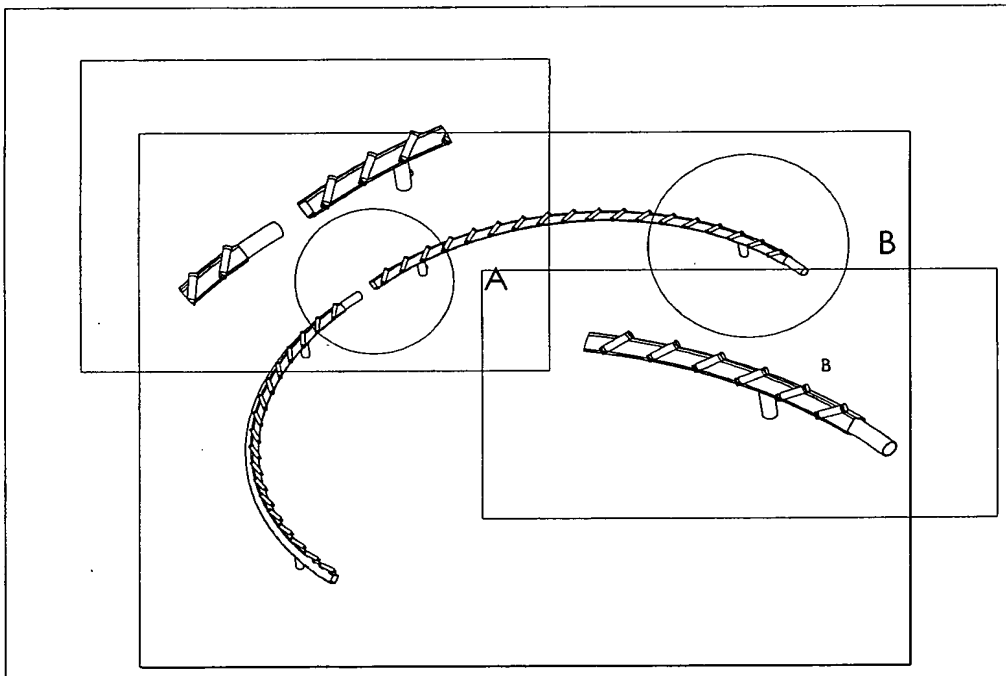

Figure 2: Two sectors of the older version of the soft-edged trampoline showing the long connecting tongue between the sectors and the rod sockets on th outside of the frame

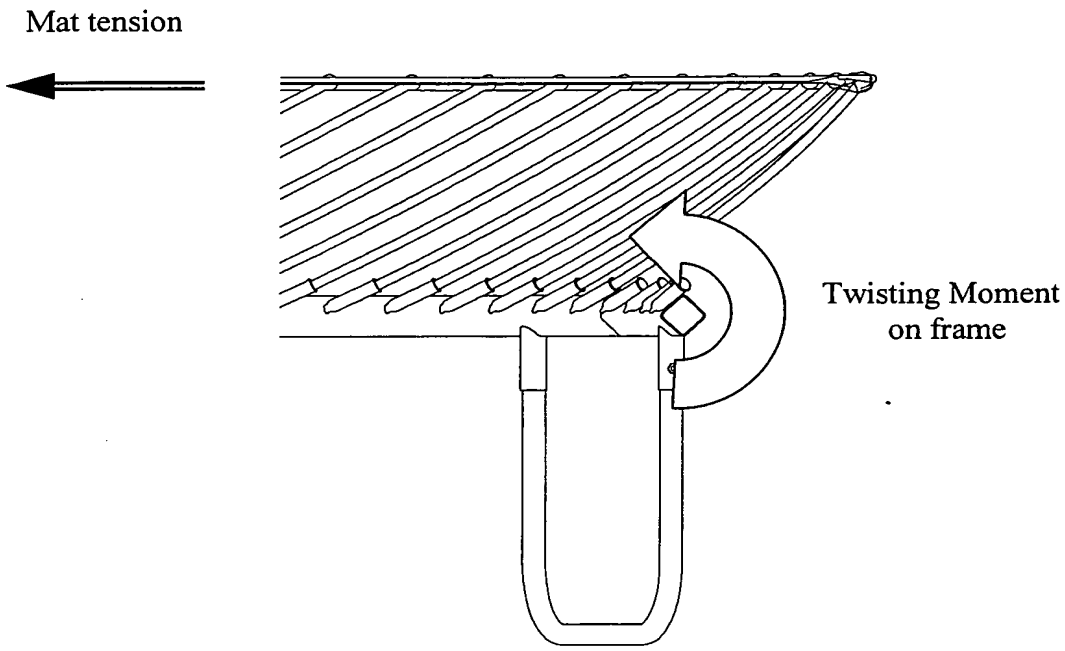

Figure 3: Twisting moment on the frame from the mat tension above

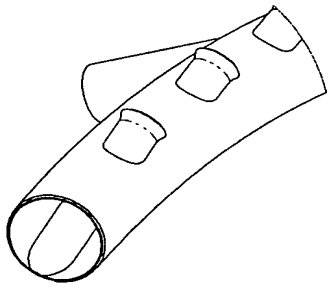

Figure 4: Rod sockets mounted inside the frame tube

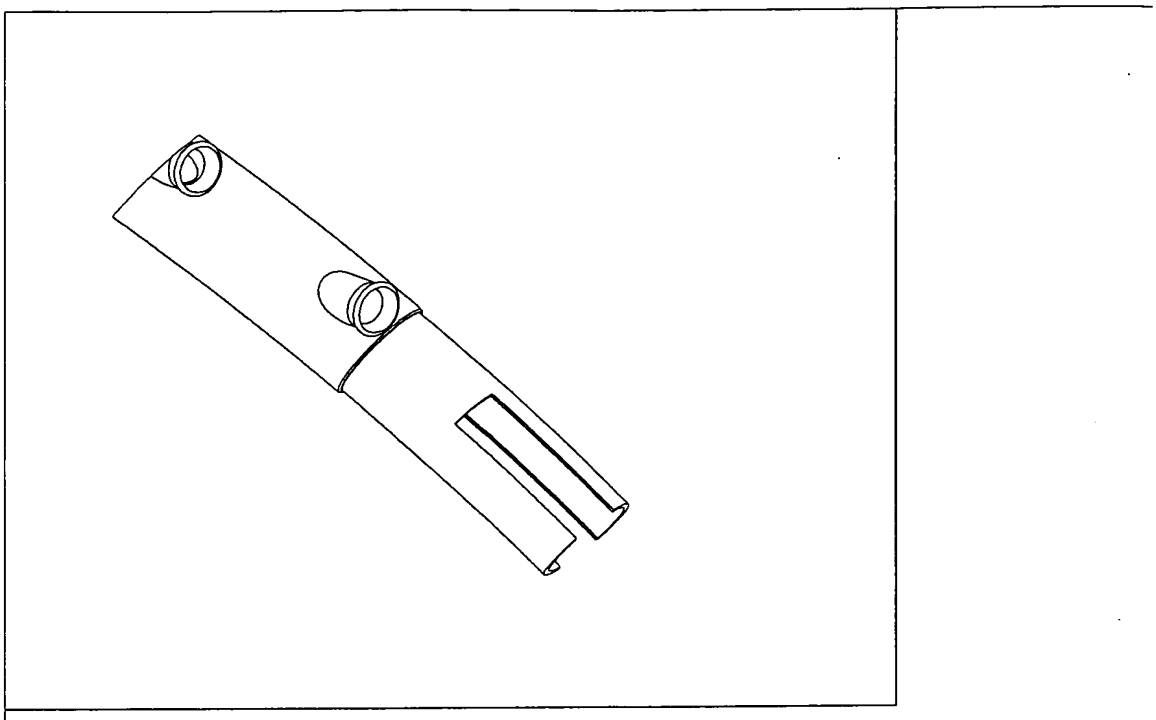

Figure 5: A split tongue necessary for the frame of Figure 4

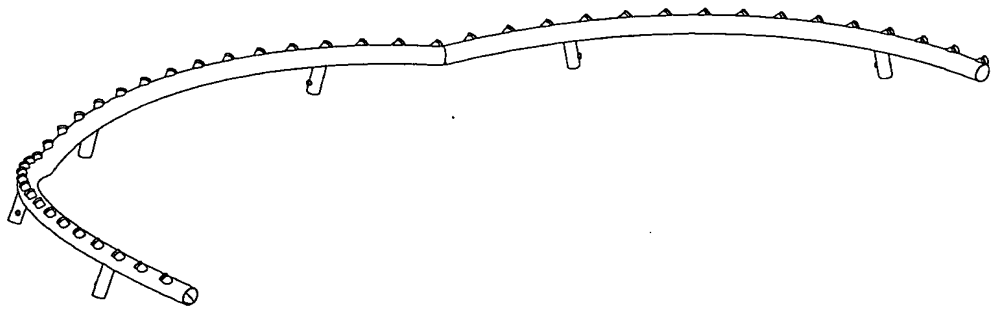

Figure 6: Frame distortion with the 6-part frame (only 3 parts shown)

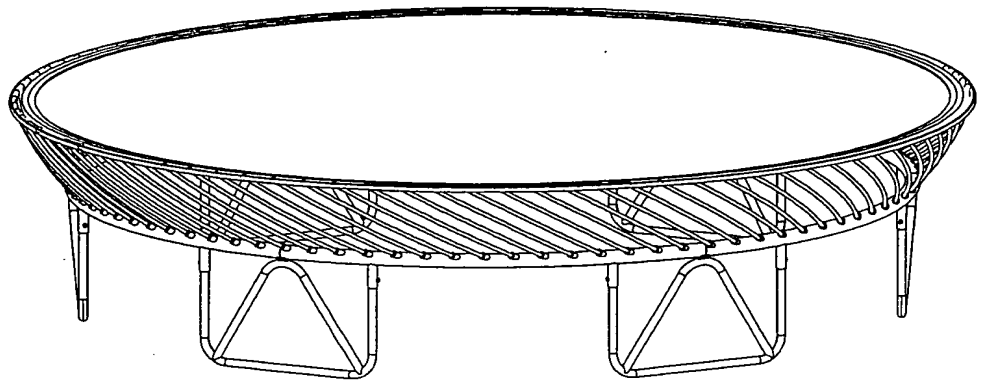

Figure 7: The later version of the trampoline with an additional central structure within the leg, that gives support to the connection between the frame sectors

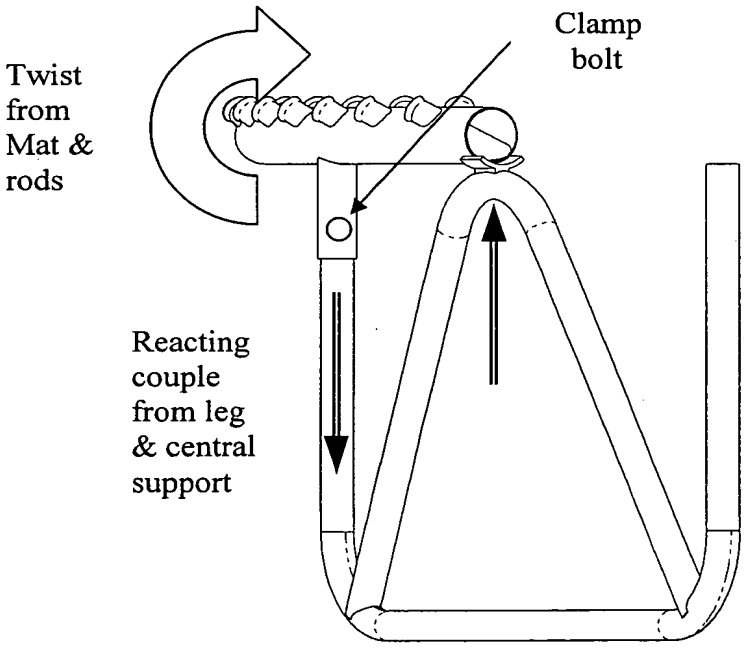

Figure 8: One frame sector and one leg with central support, viewed along the axis of twist, showing how the leg central support prevents rotation

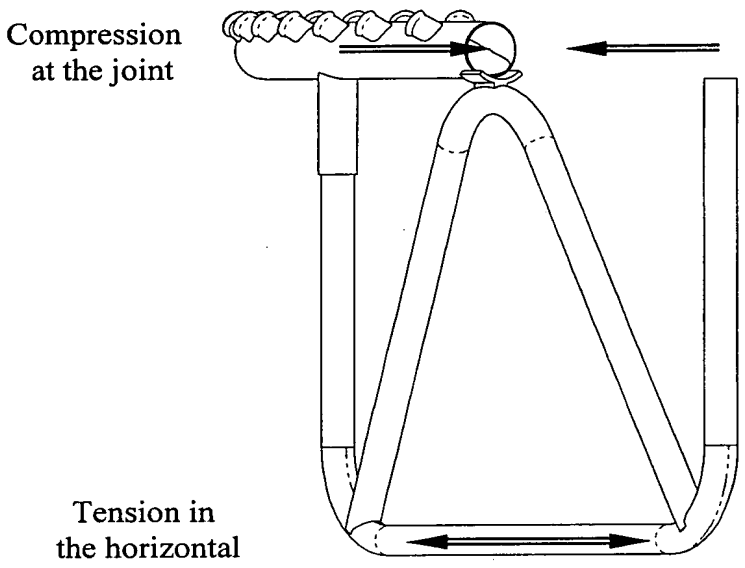

Figure 9: The same view as Figure 8, but showing how the reacting couple is transferred to the next frame sector, by tension in the bottom part of the leg and compression at the joint.